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FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Section 2.106 of	)	ET Docket No. 93-59
the Commission's Rules to	)	RM-8092
Allocate Spectrum for	)	

Further, Radian's proposed use of 900 MHz frequencies is very likely to interfere with other authorized or proposed uses, such as the Location and Monitoring Service ("LMS") (formerly Automatic Vehicle Monitoring Systems ("AVM")), discussed in the Commission's Notice of Proposed Rulemaking for Amendment of Part 90 of the Commission's Rules, 8 FCC Rcd. 2502 (April 9, 1993) (the "LMS NPRM").[1/] This failure to adequately address interference issues becomes even more significant in light of the

multi-lane environment using a single base station, even at high speeds. The effective communications range of the system is roughly 100 feet.

The VRC system will initially be used for automatic toll collection. However, system architecture has been designed to allow the VRC system to serve as the communication link for more sophisticated Intelligent Vehicle Highway System ("IVHS") applications that require a short range link between vehicles and neighboring infrastructure. Examples include vehicle fleet tracking, highway use monitoring, emergency warning message transmission, route delay calculation, and facilities availability information at highway exits, among others.

II. Wind Profile Radar System Operation In The 900 MHz Band Is Inconsistent With The Commission's Proposal In LMS Proceeding

In considering new allocations of radio spectrum, the Commission should reject proposals that do not adequately demonstrate a public need for proposed services that is superior, or at least equal, to that of competing proposals. Cf. Use of Radio in Establishing a Public Air-Ground Telephone System, 57 Rad.Reg.2d (P&F) 1219, 1222-23 (Comm'n 1985) (denying petition for allocation rulemaking because "the needs of other services competing for the same spectrum [were] more pressing and should be accorded greater priority").

The Commission has now proposed to allocate to LMS the frequencies sought by Radian for wind profile use. As the Commission noted in its LMS proceeding: "[d]evelopment of [LMS] systems has recently progressed to the point where a number of systems have become viable and are now providing [LMS] service. Demand has been

demonstrated for the wide variety of services that different types of [LMS] systems are capable of providing, and we anticipate that the demand for [LMS] services will continue to grow." LMS NPRM at 2502 (footnotes omitted). Moreover, LMS systems "will likely constitute important components of the future Intelligent Vehicle Highway System and tracking of cargo in the trucking, railroad and maritime industry." Id. Allocation of 902-928 MHz for LMS use is clearly in the public interest. In addition, there is no viable proposal for LMS systems to operate at alternative frequencies, as contrasted to wind profile radars, with their proposed allocation at 449 MHz. Notice at 2549.

Radian argues that it is necessary to use wind profilers in the 900 MHz band to obtain higher resolution at lower altitudes than is possible at 449 MHz. In its original petition, Radian indicated that this allocation was necessary for use in weather forecasting, wind shear prediction, and pollutant monitoring. Radian Petition at 4-5. See also Notice at 2549 (discussing Radian's claim that low altitude resolution using 900 MHz "permits detection of wind shear conditions").

Now, in its reply in the wind profiler rulemaking proceeding, Radian indicates that the need for 900 MHz wind profilers is restricted to "monitoring the transport of pollution particulate and ozone levels." Radian Reply at 5. In fact, in an engineering statement attached the reply comments, a Radian engineer states flatly that "Radian operates no 915 MHz systems currently utilized for wind shear detection. Indeed, the [FAA] is supporting NEXRAD and Terminal Doppler Weather Radars for wind shear detection, not wind profilers." Engineering Statement of John Neuschaefer, Radian Reply at Appendix A, ¶ 8 (emphasis added).

Thus, Radian's various explanations for its "need" for 900 MHz spectrum seem confused at best. Radian is now asserting a need to operate wind profile systems at 900 MHz strictly in order to monitor air pollution at low altitudes. While such a capability may have some value, it does not overcome the public interest for expansion of LMS, recognized by the Commission. Thus, wind profile operations at 449 MHz, which "offer a compromise between resolution and altitude coverage that enables wind and direction measurements at altitudes of up to 15-20 km," should be sufficient. Notice at 2546.

Because the need for wind profilers in the 908.75-921.25 MHz band has not been shown, the proposed allocation can only be made if it is shown that wind profile radars in this band present no material threat of interference to or by other authorized uses of the band. No such showing has been made.

Neither the Radian Petition nor Radian Reply sufficiently addresses the potential for interference with other users, or how interference is to be resolved. In its Notice, the Commission agreed with commenters on the Radian Petition that the record was incomplete regarding potential impact of the Radian proposal on other users. Notice at 2549. The importance of this concern has been elevated by two events since Radian's Petition was filed: (1) Radian's expansion of its requested allocation from 2 MHz to 12.5 MHz, and (2) release of the LMS NPRM, proposing to allocate 912-918 MHz for LMS narrow-band use.

As it now stands, the frequency band proposed for wind profilers, 908.75-921.25 MHz, completely covers the major band proposed for narrow-band LMS systems, and, overlaps by 3.25 MHz into each of the two 8 MHz blocks proposed for wide-band LMS systems, 904-912 and 918-926 MHz. See LMS NPRM at 2505-07. Radian has argued that

concerns about interference posed by commenters on the Radian Petition are unfounded, in part because there have been virtually no reports of interference in the past. Radian Reply at 7-8. This ignores the imminent expansion in LMS activity cited by the Commission in its LMS NPRM, and the concurrent increase in the number of wind profile systems operating at 900 MHz if Radian's proposed allocation is made.

The record also contains insufficient data to assess wind profiler susceptibility to co-channel interference. Radian uses the term "co-secondary" with the amateur radio service to describe the proposed allocation. Radian Petition at 2. With such an allocation, wind profile radar operators within the 902-928 MHz band would be bound "to not causing harmful interference to, and not receiving protection from any interference due to the operation of, industrial, scientific, and medical devices, automatic vehicle monitoring systems, or Government stations authorized in this band." 47 C.F.R. § 97.303(g)(1) (emphasis added). Wind profile operations thus may be severely limited by interference from a growing and evolving universe of LMS services. This may be especially true in the case of pulse-ranging multilateration LMS systems, many of which operate over a wide geographic area, and are thus likely to interact with wind profile emissions, regardless of the degree of sidelobe suppression. See Radian Reply at 9.

Moreover, it is likely that wind profiler operations, if allocated in the 902-928 MHz band would be subject to another significant source of interference. Part 15 office rules allows unlicensed intentional radiators to use high power in the band 902-928 MHz, see 47 C.F.R. §§15.245, and 15.249. At least two manufacturers, AT&T and Cincinnati Microwave, have announced that they soon will be marketing 1 watt (4 watt EIRP) cordless

telephones in the 902-928 MHz band. While Part 15 devices are legally secondary to any licensed service, the LMS NPRM notes the practical problems of preventing interference to wind profilers from Part 15 devices.[3/] There is little point to allowing wind profiler operations into this band with their attendant interference to LMS and other services, if "real world" interference conditions effectively limit their performance.

As pointed out in numerous comments on the Radian Petition, See Notice at 2549, the burden of demonstrating that the need exists for wind profile radar operations in the 900 MHz band, and that operations in that band will be adequately protected from interference, rests with Radian, the party supporting the proposed allocation. Such showings have not been made, and Hughes recommends that the Commission deny the Radian Petition, and not initiate a rulemaking to allocate spectrum in the 900 MHz band for wind profile use.

CONCLUSION

As the Commission has recognized, LMS is already expanding rapidly, and will offer a wide variety of future services to the public. LMS will become an integral part of the Administration's initiatives to build and expand the nation's infrastructure. However,

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3. See LMS NPRM at ¶ 24 (including ¶ 3 of the Erratum released May 5, 1993, DA 93-516).

the success of LMS depends largely on careful management of the 902-928 MHz band. Uses of the band as that proposed by Radian, should not be authorized. The Commission should deny the Radian Petition.

Respectfully submitted,

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CERTIFICATE OF SERVICE

I, Camille D. Alexander hereby certify that on this 15th day of June, 1993, a true copy of the foregoing **Comments of Hughes Aircraft Company** was mailed, postage prepaid to the following:

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